EU funds for Malta 2014-2020

WATER BE THE CHANGE

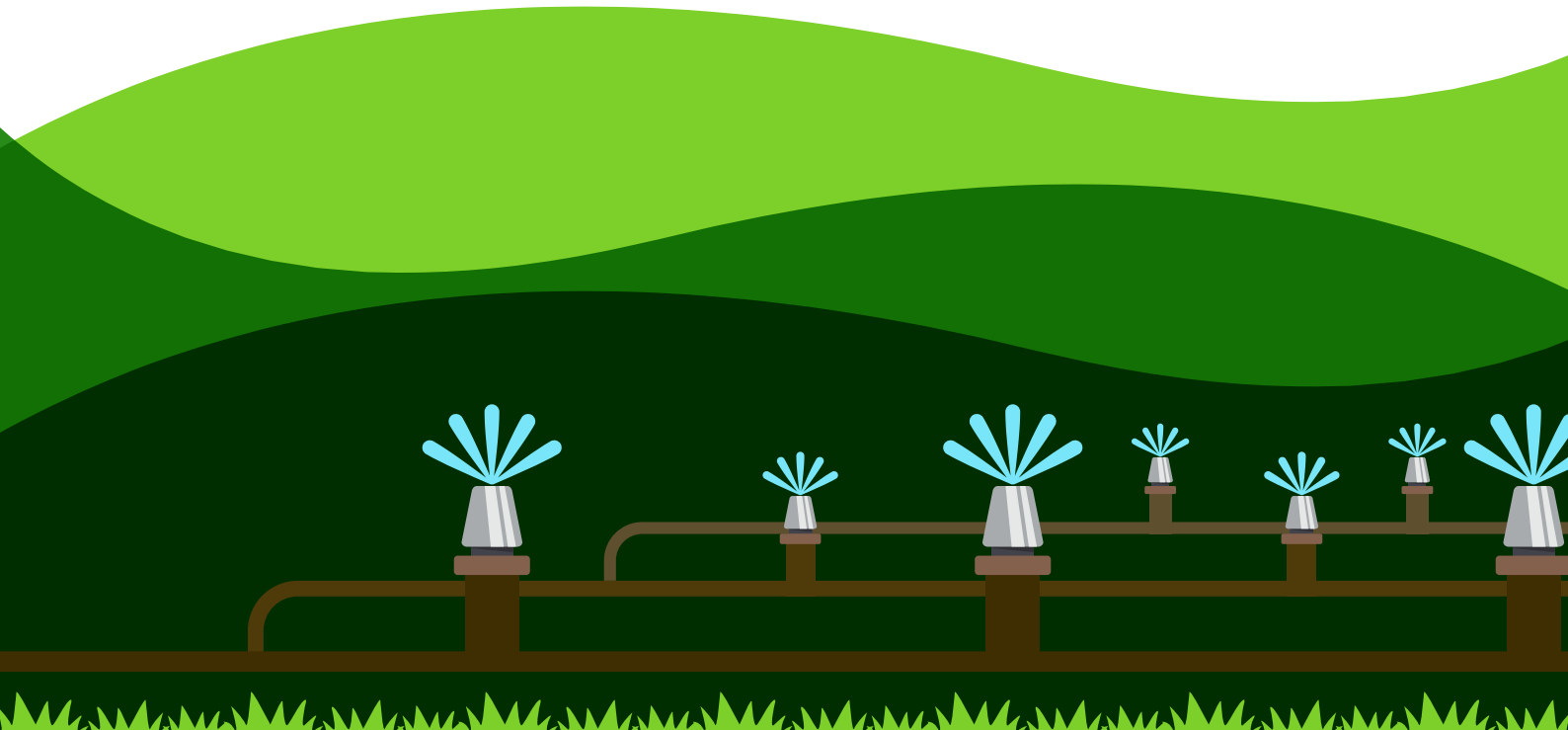
MINISTRY FOR ENERGY AND WATER MANAGEMENT

PARLIAMENTARY SECRETARIAT FOR EUROPEAN FUNDS

CF.PA10.0096 - Enhancing National Monitoring and Public Engagement Capacity for improved Water Resources Management

WATER EFFICIENT IRRIGATION

Conference held at Corinthia Palace Attard
February 19, 2020



CT3000/2018

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1. Executive Summary

The Water Efficient Irrigation Conference took place on Wednesday 19th February 2020. The conference was held at the Corinthia Palace Hotel & Spa, Attard, Malta which is a central location for such an event.

Attendees were able to sign up for the conference through https://water.org.mt/join-the-drops/conference/ website, where they could fill in a form or by calling +356 2777 2777 to register.

Parking was available for all and its perfect location allowed all attendees to attend. A standing breakfast and lunch were provided for all attendees. A coffee break was also scheduled during the conference to provide attendees with a short rest.

In total, 113 people attended this conference. The attendees were made up of farmers, NGO's, different ministerial representatives and local council representatives. All attendees registered their attendance at the registration desk. The conference was open for all and walk-ins were also accepted on the day.

The conference lasted till the afternoon and was hosted by Keith Demicoli. The conference consisted of 6 speeches delivered by different experts in the sector as well as a Panel discussion. Throughout the report you may find the presentations that took place as well as the key points of each presentation.

The conference was expecting to receive attendees who either only understood Maltese or only understood English. Live translation was provided through the use of translators and headsets were also provided.

An Exhibition stand with merchandise of the Campaign 'Water Be the Change' was set up inside the conference halls. Several merchandise items such as reusable water bottles, mugs, caps, pens, calendars were available for all participants.

An issue with attracting exhibitors to set up a stand was encountered. This occurred due to the fact that there was little interest from the exhibitors' end since the machinery and equipment that would need to be exhibited is costly to bring to the venue. The exhibitors also claimed that they do not have enough human resources to send during the conference and keep the business running at the same time.

2. Conference Agenda

Date: February 19, 2020

Venue: Corinthia Palace Hotel & Spa, Attard, Malta

Time	
08:30	**Registration & Welcome Coffee**
09:00	**Opening Session** Manuel Sapiano, CEO, Energy and Water Agency
09:15	**Introduction to the National Water Conservation Campaign – WATER – Be the Change (Agriculture Aspects)** Dr Michael Schembri, Energy and Water Agency
09:45	**Keynote Speech – Opportunities for collaboration for Maltese agricultural organisations** Adriano Battilani, Irrigants d'Europe (IE)
10:15	**Coffee Break**
10:45	**Thematic Presentation – A research and policy vision for efficient water management in Maltese agriculture - results from a multinational project** Malcolm Borg, Deputy Director, Centre for Agriculture, Aquatics & Animal Sciences, MCAST
11:15	**Thematic Presentation – Water efficient irrigation in greenhouses** Francesco Montesano, National Research Council - Institute of Sciences of Food Production
11:45	**Thematic Presentation – Innovative irrigation technologies for outdoor irrigation** Gioele Chiari, Acqua Campus Lab (CER)
12:15	**Panel Discussion – Challenges for improving irrigation efficiency** - **Manuel Sapiano**, CEO, Energy and Water Agency - **Marco Dimech**, Assistant Director, Agriculture Directorate within the Ministry for Agriculture Fisheries and Animal Rights. - **Malcolm Borg**, Deputy Director, Centre for Agriculture, Aquatics & Animal Sciences, MCAST - **Adriano Battilani**, Irrigants d'Europe (IE) - **Gioele Chiari**, Acqua Campus Lab (CER)
13:15	Closure of Conference
	Lunch

3. Detailed report of conference proceedings

3.1 Opening Session

MANUEL SAPIANO, CEO, ENERGY AND WATER AGENCY

Mr Sapiano spoke about how Malta needs to accept the reality that water is scarce, and we need to begin discussing how to use it more efficiently. It is important for the people to understand that we are living in an everchanging world. The main points discussed were in relation to using water more efficiently and sustainably. Mr Sapiano noted that the water situation in Malta is a challenging one, solutions are being looked into, next is to look into how to implement them.

Mr Sapiano highlighted how this issue is not solely a Maltese one, but it is a challenge for many other countries around the world. It is important that all sectors contribute to the saving of water, the sectors ought to work together.

3.2 Introduction to the National Water Conservation Campaign – WATER – Be the Change (Agriculture Aspects)

DR MICHAEL SCHEMBRI, ENERGY AND WATER AGENCY

Dr Schembri spoke about how the campaign is a collective one. He emphasised on the point that small changes can make a big difference and that each and every person should be the change they would like to see. Emphasis was made on the different ways the campaign will be reaching out to all. The 4 main ways are:

1. Inform – increasing the population's awareness on the reality the Maltese Islands are facing with regards to water,
2. Engage – discussions with different stakeholders throughout the whole campaign,
3. Empower – giving the necessary tools to different stakeholders in order to implement the changes (through information and technologies); and
4. Demonstrate – sites with demonstrations to show that water conservation works.

Some technologies that increase water efficiency were mentioned.

- Soil moisture controllers
- Rain sensors
- Buried irrigation diffusers
- Smart irrigation control

3.3 Keynote Speech – Opportunities for collaboration for Maltese agricultural organisations

ADRIANO BATTILANI, IRRIGANTS D'EUROPE (IE)

Mr Battilani's first point expressed how little is known about Maltese agriculture. He mentioned how water supply is not only a critical issue for the Maltese Islands but also for numerous countries in the EU. He expressed that Malta needs its agriculture; it is an asset for the Maltese Islands' tourism.

Mr Battilani emphasised that agriculture has an effect on the Maltese economy. The Maltese Islands have become heavily dependent on foreign imports. The Maltese agriculture industry must rebuild trust in the products they are producing to avoid them from having to purchase produce from abroad.

Mr Battilani mentioned that the anthropogenic impact on the environment has to be taken into consideration.

The importance of collecting data on the cropping system was discussed. The methods to collect this data would be through observation and measurement. Once the data is collected the tools and platforms need to be given to transform the data into understandable information.

He discussed the importance of looking at the future. Irrigated agriculture needs a Climate Change Adaptation Program, that does not only focus on the urgent and necessary mitigations actions needed but looks into long-lasting ones that would have a permanent effect.

3.4 Thematic Presentation – A research and policy vision for efficient water management in Maltese agriculture - results from a multinational project

MALCOLM BORG, DEPUTY DIRECTOR, CENTRE FOR AGRICULTURE, AQUATICS & ANIMAL SCIENCES, MCAST

During his presentation the results of the project "A research and policy vision for efficient water management in Maltese agriculture" were discussed.

The aim of the project was to strengthen the network between all organisations. The ultimate aim of the project was to have a nucleus of experts that can then transfer this information to the farmers. To them it is useless having the knowledge if the farmers don't or can't access it.

Two reports were produced:

1. Describing what research is needed
2. The policies that need to be implemented in order for the water situation in Malta and Gozo to improve.

Agriculture uses most of the water available on the Maltese Islands. This leads to several risks:

1. Availability
2. Saline intrusion into the ground water

The priorities on how to improve the situation were discussed. The main point discussed was how to reduce the dependency on ground water, and the importance of not being afraid of change.

The last point emphasised that whatever happens the farmers have to be on board and well informed so that they can plan accordingly. The importance of gathering more data was emphasised.

3.5 Thematic Presentation – Water efficient irrigation in greenhouses

FRANCESCO MONTESANO, NATIONAL RESEARCH COUNCIL - INSTITUTE OF SCIENCES OF FOOD PRODUCTION

Mr Montesano went through a number of case studies to show that water efficient technologies produce results in greenhouses.

One main way of increasing efficiency is through soilless cultivation. The element of producing high quality products was taken into consideration and it is a driver in agriculture. He also considered the importance of having fresh agricultural products and the environmental impact.

Mr Montesano mentioned that one study on tomato cultivation in a greenhouse had less of an environmental impact than cultivating them in an open field.

Greenhouse cultivation allows for efficient water management through different methods. Some of which are:

- Soilless cultivation
- Sensor based irrigation management
- Tensiometer use
- Dielectric sensors

Implementing sensor-based technologies can lead to a 36% revenue, 34% profits, improvement of crop performance and a payback period of 1 year.

3.6 Thematic Presentation – Innovative irrigation technologies for outdoor irrigation

GIOELE CHIARI, ACQUA CAMPUS LAB (CER)

The first point addressed by Mr Chiari was that climate change is having its effects on the farmer. He explained that the Maltese population is growing from year to year and therefore there has been an increased demand for food.

The idea of rainfall harvesting was brought up. Mr Chiari mentioned how this can be done collectively across different farms and how the water would be shared.

Mr Chiari went on to explain different methods that would help with water efficiency on a farm. The methods explained were:

- Organic matter
- Drip irrigation
- Sprinklers
- Remote sensing
- Moisture sensors

The Acqua Campus was explained. It is a research site for irrigation. It is an important meeting point for farmers and for the industries who produce the technologies.

3.7 Panel Discussion – Challenges for improving irrigation efficiency

PANEL SPEAKERS: MR MANUEL SAPIANO, MR MARCO DIMECH, MR MALCOLM BORG, MR GIOELE CHIARI AND MR ADRIANO BATTILANI

The themes discussed during the panel discussion were:

1. The importance of collecting true and reliable data;
2. To understand the critical situation the Maltese Islands are in with regards to the scarcity of water;
3. The informed implementation of technologies;
4. The importance of using seeds that are compatible with the climate of the Maltese Islands;
5. The importance of the different sectors to work together towards the common goal.

What can be done? More tangible actions?

Mr M Sapiano: The campaign is just one of the activities that is being done. It is important to be aware of the challenges that the Maltese Islands are facing. One has to address these challenges step by step to make sure that using water wrongly is minimised. He believes that in reality people are not wasting water. With regards to meters on the boreholes, it seems that there is efficient use of water. They are trying to compare the water meter data with the data received from the satellite. The intention is to use positive approaches rather than negative ones first. It is the impression that the agricultural sector is proactive and is taking measures itself.

When using technology, it is important to have the right information so that the technology can be effective. Whatever investment is carried out needs to be taken with the right knowledge.

Mr M Dimech: A project is soon launching. This project will allow us to monitor the use of water and for soil. Data is very important so that the right measures are taken for the industry. It is very difficult to adapt foreign technologies in the local context because of our size.

Foreign seeds need a lot more water and we are not doing anything to use the local seeds which require less water. We do not expect miracles because the local agriculture sector is already doing a lot of work.

The Maltese Islands has a problem of soil water retention and we also have a weakness in the water.

Further questions posed:

Water table: before there were water walls built but it is not being done anymore.

No water is being collected from construction areas, construction of roads are not being constructed to collect the rain water, planting trees which need a lot of water. There is no planning for the water catchment.

New water: It is not fair that new water is not available for everyone at the moment. This is creating unfair competition.

Will New Water solve the all the problems we have? No, it can address only a quarter of the needs of the agricultural sector. The water is safe and is certified by the health authorities. It was emphasised that it is in their interest that safe water is used abroad too since we import a lot of fruits and vegetables.

The Maltese need to understand that to be sustainable in the agricultural sector we need to work together. We might need to look back at what used to be done in the past and adapt the past techniques to the present. The farmers are noticing that climate change and lack of water and rain is making a big difference. We need to see what the objectives are and try to match that with the local demand in Malta.

Mr G Chiari: The farmers who invest in new technologies need help as these cannot do it on their own. Especially for those who are the first to do it. The farmers need to have technicians to support and guide the farmers individually as the demands from one farm to another are very different.

4. List of Attendees

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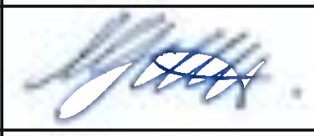
Dr Charles Galdies	UOM	79908730	charles.galdies@um.edu.mt		
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Cremona	Ghajn Rasul Co Ltd - Sam Cremona	79 582 294	samcremona1950@gmail.com		
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Schembri Dylan	EWA				
Sciberras Michelle	EWA				
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Stephen Galea (1)					
Stephen Galea (2)		79462669	33sjgalea@gmail.com	38 Triq Guze Ellul Mercer Had-Dingli DGL 1118	

Water Efficent Irrigation - 19th February 2020 - Attendance

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Water Efficent Irrigation - 19th February 2020 - Attendance

Name & Surname	Organisation	Telephone / Mobile Number	Email	Address	Signature
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Water Efficent Irrigation - 19th February 2020 - Attendance

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Carmel Bezzina		79564620	"	150, Triq ir-Rebbiegha Siggiewi	[signature]
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Patrick Martin	Agri	79057521.	\	Zabbar.	[signature]

144471
568848M

* Took 2 for Foreign Speakers - Earphones/headphones

* Manuel Abdilla - ID - 757M

5. Presentations

L-AGRIKOLTURA BZONN L-ILMA

L-ILMA BZONN L-AGRIKOLTURA

Manuel Sapiano

L-ILMA
IBDA MINNEK

PRINCIPJI

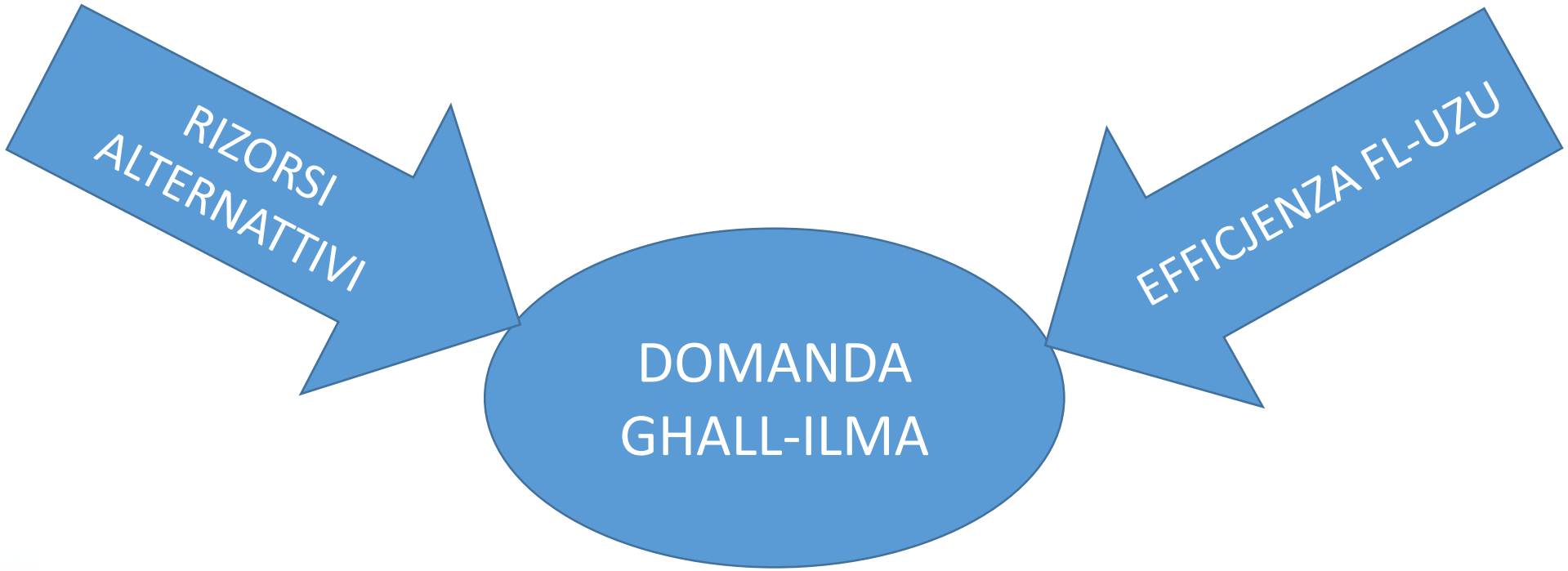
- IRRIDU NARAW AGRIKOLTURA F'PAJJIZNA?

- IL-PRATTIKA TAL-AGRIKOLTURA GHANDHA BZONN L-ILMA GHALL-IRRIGAZZJONI

- KIF SE NINDIRZZAW ID-DOMANDA GHALL-ILMA TAS-SETTUR AGRIKOLU BL-AKTAR MOD SOSTENIBBLI?

L-ILMA
IBDA MINNEK

POLITIKA


RIZORSI ALTERNATTIVI
EFFICJENZA FL-UZU
DOMANDA GHALL-ILMA

TIBDIL FIL-KLIMA

IMPATTI TAL-BIDLA FIL-KLIMA:

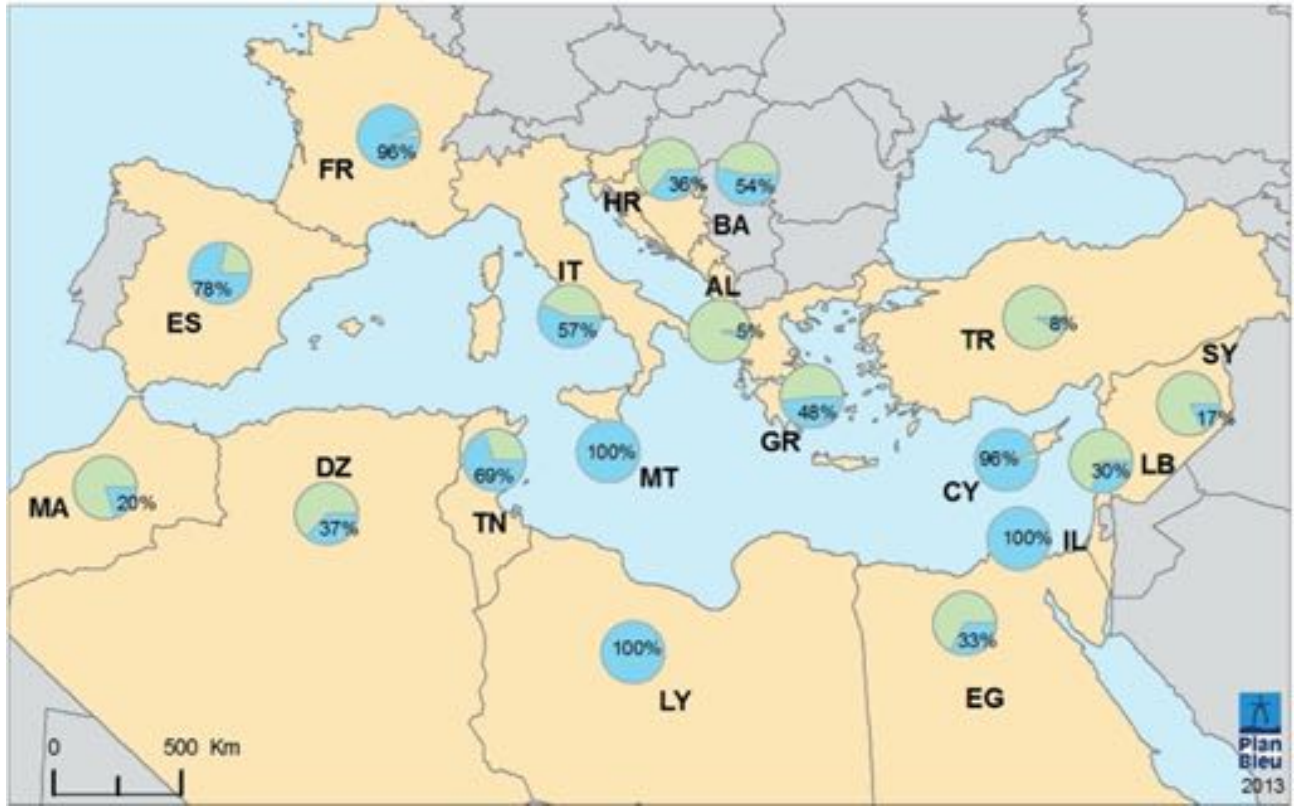
- INQAS XITA – INQAS RIZORSI NATURALI U IKTAR BZONN TA IRRIGAZZJONI

- TEMPERATURI GHOLA – TELF IKBAR TA ILMA U IKTAR BZONN TA IRRIGAZZJONI

L-ILMA
IBDA MINNEK

IRRIGAZZJONI

IMPORTANTI NIRRIKONOXXU L-ISFORZI KBAR LI SARU MIS-SETTUR AGRIKOLU F'MALTA BIEX L-UZU TAL-ILMA GHALL-IRRIGAZZJONI ISIR AKTAR EFFICJENTI



L-ILMA
IBDA MINNEK

RIFLESSJONI

HUWA FL-INTERESS TA’ KULHADD LI NTEJJBU L-MOD KIF JINTUZA L-ILMA – MHUX BISS FL-AGRIKOLTURA, IMMA ANKE FL-AGRIKOLTURA

SEMPLICEMENT MA HEMMX ILMA BIZZEJJED GHALL-ATTIVITAJIET KOLLHA LI JSIRU F’PAJJIZNA

U FIL-FUTUR SE JKUN HEMM INQAS

L-ILMA
IBDA MINNEK

INHARSU L-QUDDIEM

X’INHUMA S-SOLUZZJONIJIET?

X’INHUMA L-ISFIDI BIEX NADDOTTAW SOLUZZJONIJIET GODDA?

KIF NISTGHU NAHDMU AHJAR FLIMKIEN?

L-ILMA
IBDA MINNEK

DISKUSSJONI

L-ISKOP TA’ DIN IL-KONFERENZA HUWA LI NISIMGHU LIL XULXIN U MHUX LI NAGHTU TORT LIL XI HADD, TA PROBLEMA LI HI TA KULHADD

NARAW KIF NISTGHU NINDIRIZZAW IL-BZONNIJIET TA’ KULHADD, MINGHAJR MA NGHAFFGU LIL HADD

U KIF KULL SETTUR (INKLUZ L-AGRIKOLTURA) JISTA JAGHTI L-KONTRIBUT TIEGHU

L-ILMA
IBDA MINNEK


L-ILMA
IBDA MINNEK

L-ILMA
IBDA MINNEK

KONFERENZA PUBBLIKA DWAR

L-IRRIGAZZJONI EFFIĊJENTI TAL-ILMA

Michael Schembri

19 TA' FRAR, 2020

ILMA.ORG.MT

National Water Conservation Campaign

CF.PA10.0096

WHY?

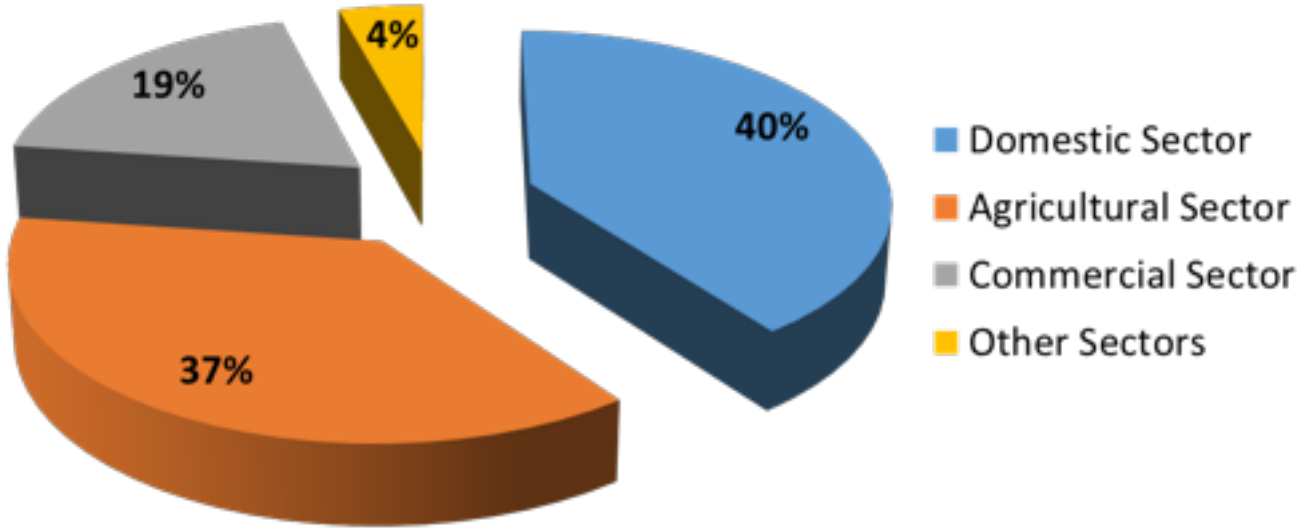
Small changes in our every day activities can make a big difference.

At home, at work and wherever we are.

Water conservation is a collective responsibility – every one of us **CAN BE THE CHANGE**.

WHY?

National Water Demand was estimated to reach 58 million m^3 (2nd RBMP).



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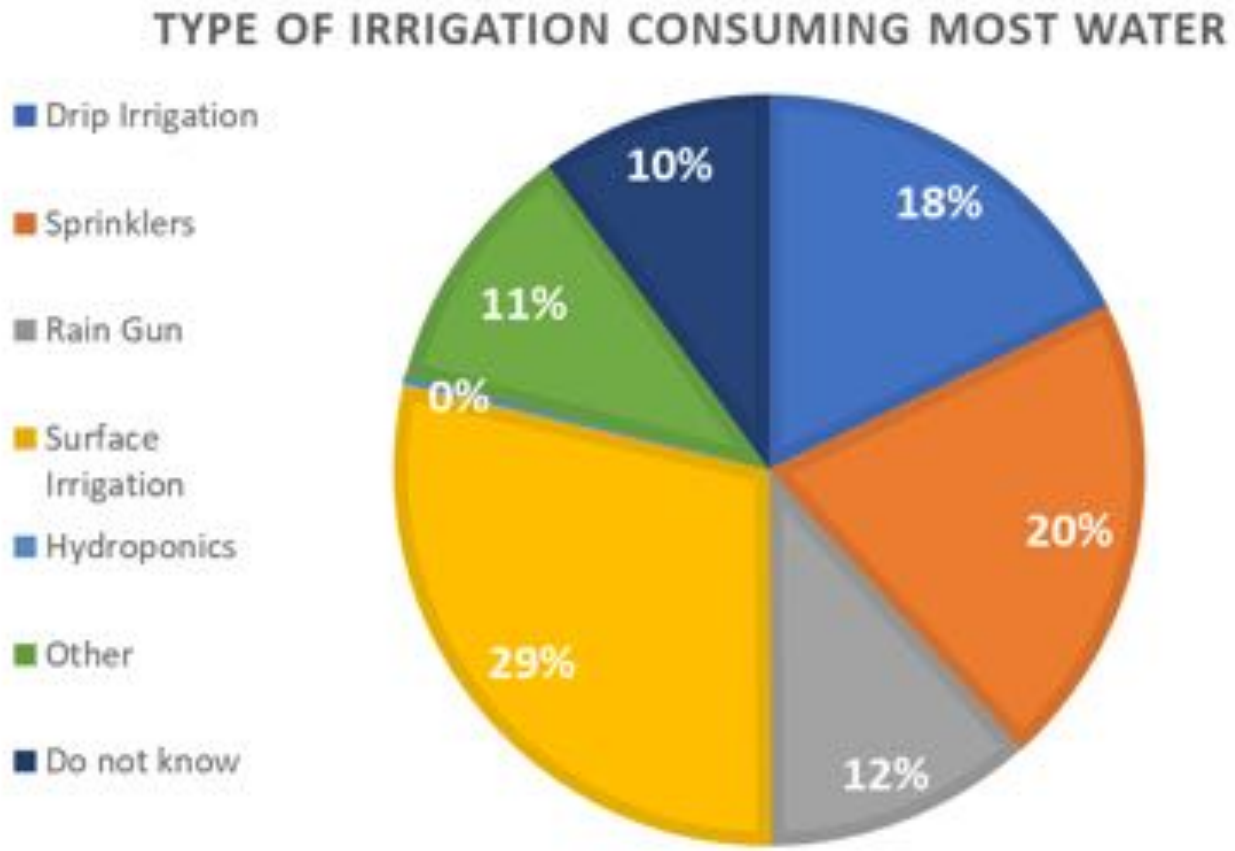
WHY?



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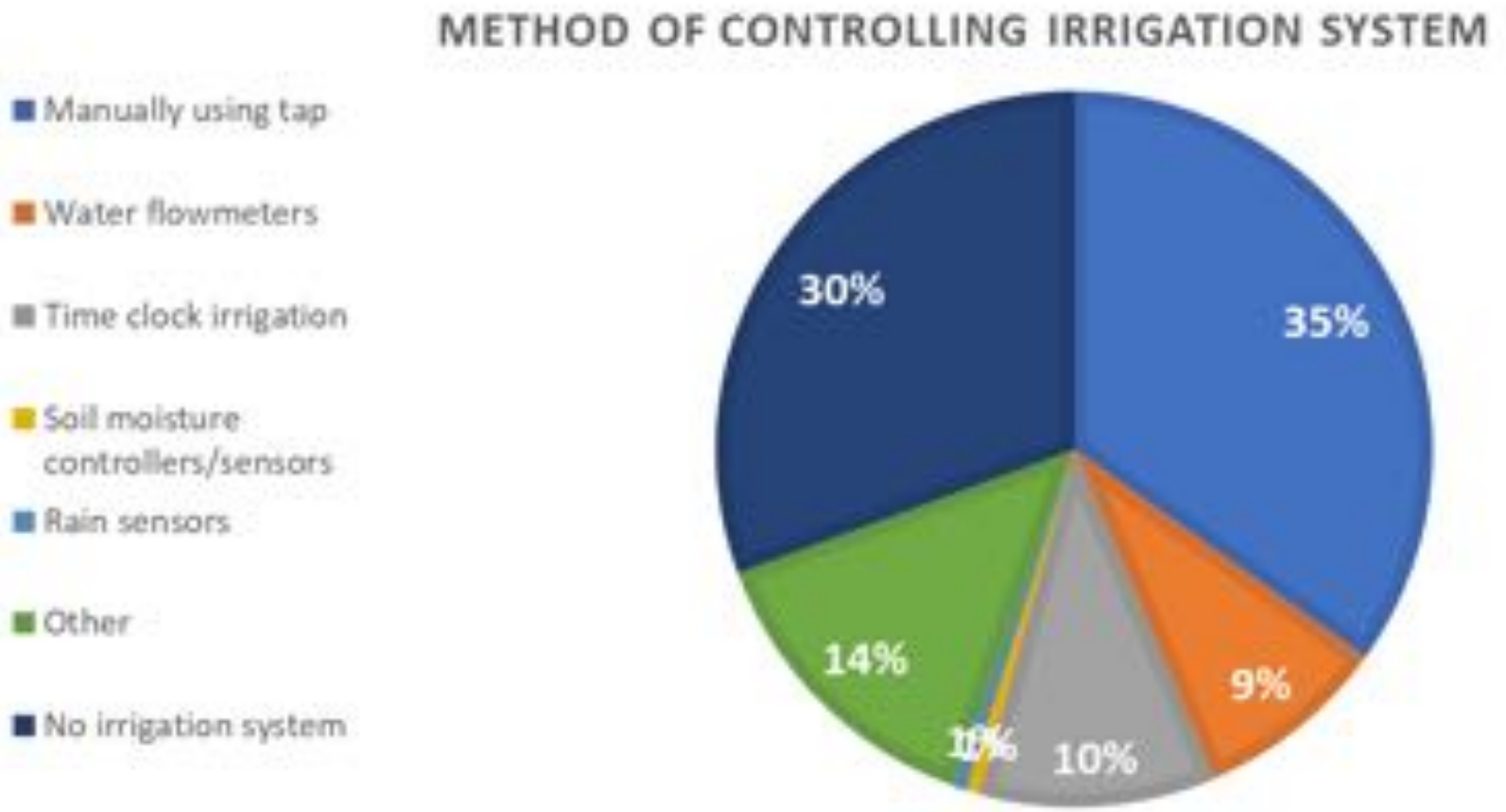
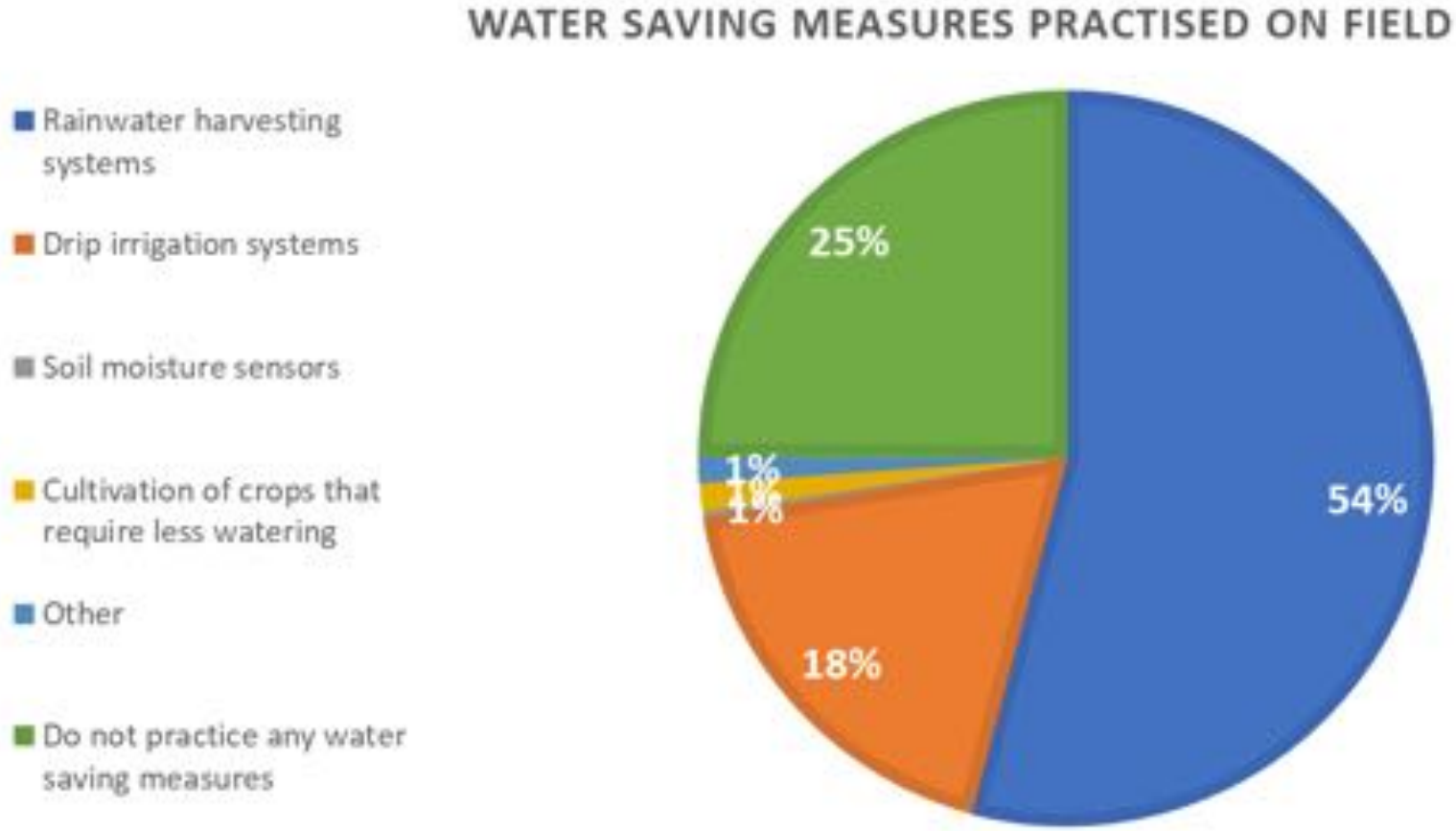
WHY?



L-ILMA
IBDA MINNEK

WHY?



L-ILMA
IBDA MINNEK

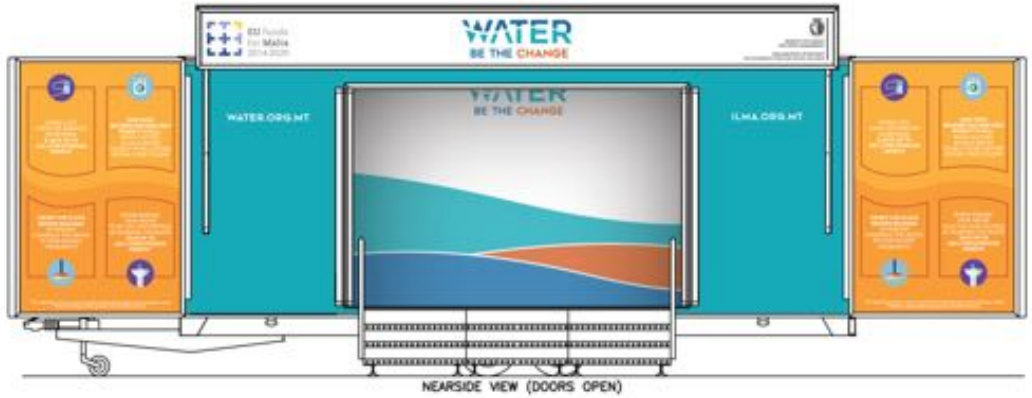
WHAT? *INFORM*

Increase awareness on what one can do to save water.

Three year media campaign.

WHAT? *ENGAGE*

Discussions with the main water using stakeholders through the various campaign initiatives.



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IBDA MINNEK

WHAT? *EMPOWER*

Giving the tools necessary to enable efficient use of water, both in terms of information and technologies.

WHAT? *DEMONSTRATE*

Development of demonstration sites to showcase that water conservation actually works.

WHERE?

Campaign Mobile Unit will tour all towns and villages in Malta over a two-year period.

Continuous presence at GHAJN – the National Water Conservation Awareness Centre in Rabat.

L-ILMA
IBDA MINNEK

DEMONSTRATION SITES

Promoting Malta’s Water Champions for efficient water use.

Demonstrating that Water Conservation works in the various water using sectors actually works.

STAKEHOLDER ENGAGEMENT ACTIVITIES

Participation in local events.

Thematic conferences with the most important water using sectors.

TECHNOLOGIES TO INCRESAE EFFICIENCY

Soil Moisture Controllers

Rain Sensors

Buried Irrigation Diffusers

Smart Irrigation Control

Rainwater Harvesting

FEASIBILITY OF ADOPTING WATER EFFICIENT TECHNOLOGIES

What are the potential savings of installing a water efficient technology?

INTEGRATED

The campaign together with other complimentary initiatives contribute towards the achievement of Malta's high level policy objective in the water sector:

"ENSURING SUSTAINABILITY OF WATER SUPPLY THROUGH INCREASING WATER-USE EFFICIENCY WHILST DIVERSIFYING THE WATER-SUPPLY RESOURCE BASE."

ENGAGING WITH THE CAMPAIGN

Campaign Information Office
Ċentru Edukattiv dwar il-Konservazzjoni tal-Ilma, Għajn Qajjet
Rabat, Malta

Contact Line: **8007 2337**

Email: **info@water.org.mt**

L-ILMA
IBDA MINNEK

Thank you for your attention

Opportunities for collaboration for Maltese agricultural organisations

Irrigants d'Europe

A. BATTILANI

B. INTERNATIONAL ASSOCIATION
IRRIGANTS d'EUROPE

WHAT ABOUT MALTA?

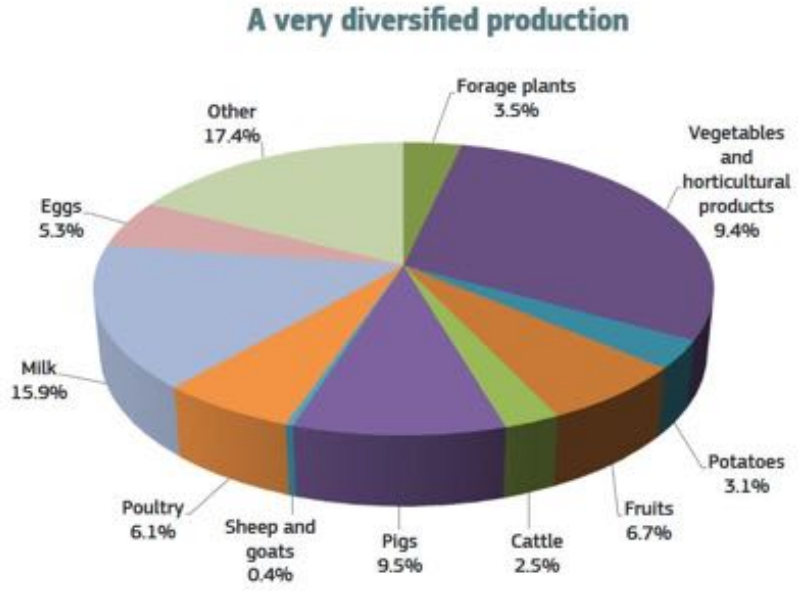
- The agricultural sector accounts for 1.7% of the country's economy (GVA), for 2.9% of total employment and for about 40% of the landscape.
- Malta's agriculture counts 9370 holdings, with an average size of 1.2 ha.
- 28.2 millions of cubic metres of water were used to irrigate 2 830 hectares of UAA in 2010 (10000 m^3/Ha)
- There are less young farmers in Malta than on average in the EU-28 (3.8% vs 6%).

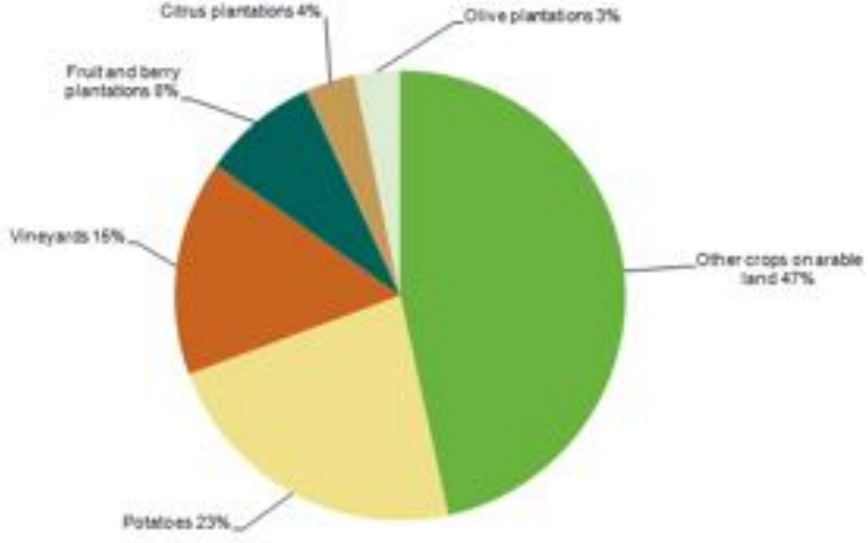
Water supply and diffuse water pollution from agriculture are critical issues for Malta, both currently and for the future, particularly in the context of anticipated climate change and demographic pressures and challenges. **Sea water and nitrates had been contaminating water stocks** to such an extent that the quality and quantity of national water reserves were threatened, forcing the island to intensify its reliance on expensive, energy-intense desalination plants for water supplies.

Maltese agriculture is a key sector for conserving the islands' water stocks: Malta's National Water Management Plan to 2027 (under)estimated that farmers uses about 19 million cubic metres of water, mostly extracted from the ground. **Agriculture is therefore the focus for a strategic set of actions to both properly protect Maltese water for future generations and help ensure adequate supplies of irrigation water for agriculture.**

MALTESE AGRICULTURE: A STRATEGIC SECTOR

	2003		2010		change 2010/2003 (%)
	Ha	% of UAA	Ha	% of UAA	
Utilised agricultural area	10 790	100.0	11 450	100.0	6.1
Arable land	9 290	86.1	9 080	79.3	-2.3
Potatoes	1 210	11.2	700	6.1	-42.1
Fresh vegetables, melons, strawberries	2 140	19.8	1 730	15.1	-19.2
Flowers and ornemental plants (total)	50	0.5	30	0.3	-40.0
Fodder crops	5 200	48.2	5 550	48.5	6.7
Seeds and seedlings	-	-	50	0.4	-
Fallow land - total	700	6.5	1 010	8.8	0.1
Kitchen gardens	420	3.9	1 120	9.8	166.7
Permanent crops	1 080	10.0	1 250	10.9	15.7
Fruit and berry plantations	350	3.2	370	3.2	5.7
Citrus plantations	100	0.9	110	1.0	10.0
Olive plantations	20	0.2	140	1.2	600.0
Vineyards	620	5.7	610	5.3	-1.6
Nurseries	-	-	10	0.1	-





VALUE FOR LANDSCAPE – VALUE FOR TOURISM

"Human interventions have transformed the landscape in a number of ways. The terracing of the fields has introduced a feature which has now become identified with the character of extensive tracts of the rural countryside. Rubble walled terraced fields are considered to give a distinctive character to the Maltese Landscape."

"From a visual aesthetic point of view, agriculture contributes significantly to the "greenery" of the rural scenery in the Maltese Islands."

MEDITERRANEAN COUNTRIES COMMON PROBLEMS AND NEEDS

As an EU Member State, Malta is obliged to take a more sustainable and integrated approach to groundwater management than was previously the case. The regulation of groundwater management in Malta has also needed to be harmonized with the relative sources of the acquis Communautaire, which are comprehensive and holistic in their approach. Within this legislative framework, integration aspects play a key role for guaranteeing the success of implementation of both the Water Framework and the Groundwater Directives. In this view, 'integration' refers to consideration of **(i) other environmental policies with impact on groundwater protection; (ii) interactions of groundwater with surface water and terrestrial ecosystems; (iii) scientific development and technological progress and (iv) socio-economic aspects**.

M. Sapiano 2008

MEDITERRANEAN COUNTRIES COMMON PROBLEMS AND NEEDS

Malta is now becoming completely dependent on foreign imports. Gone is a **local consumer's** concern for the quality of the local product thanks to cheaper imports….

Farmers are responsible for maintaining the island's agricultural landscape as well as **producing local delicacies** such as sundried tomatoes, capers and ġbejna cheese.

It's not just a draw for tourists. **The food supply is essential to hotels** hosting some 2 million visitors a year.

Our aim is to **achieve a 'net zero-impact' on the natural water cycle**, whereby groundwater being abstracted will be replaced, directly or indirectly, by means of a number of measures, including the production and subsequent delivery of new water.

GERMANY 2018 -2019 -2020 (?)

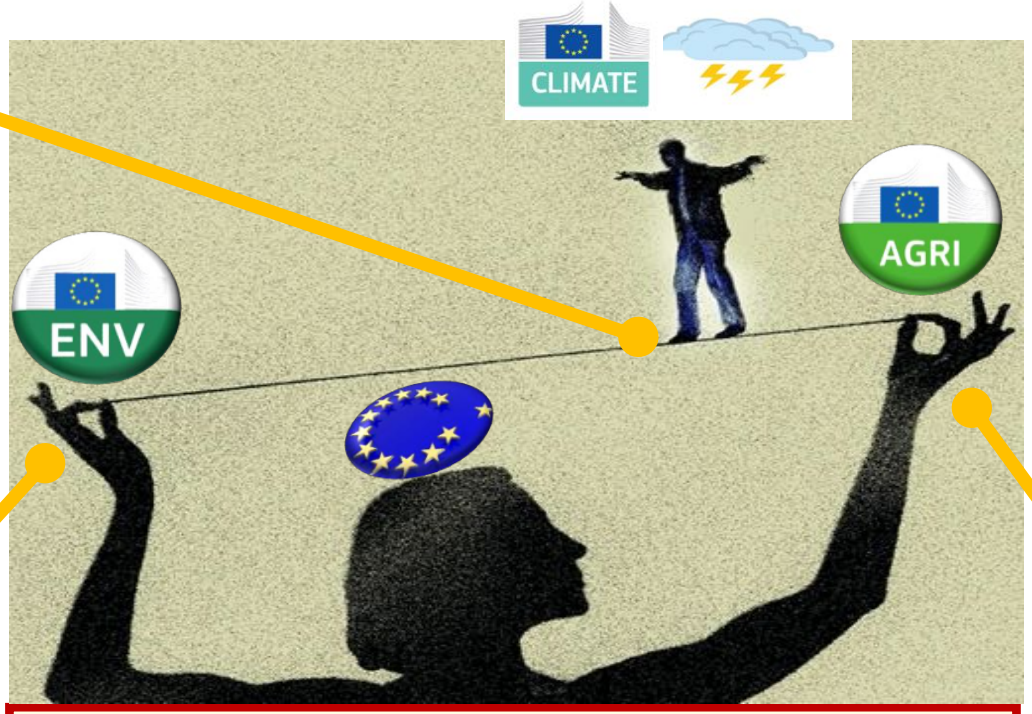
MEDITERRANEAN COUNTRIES COMMON PROBLEMS AND NEEDS

1. Public data (Eurostat, EEA) show that one of the main pressures on water quantity in Europe is water abstraction for agriculture (in particular irrigation). Is there agreement on the facts/data?
2. The fitness check of the Water Framework Directive concludes that it is fit for purpose, but that its implementation has been significantly delayed due to insufficient funding, slow implementation and insufficient integration of environmental objectives in sectoral policies (such as agriculture). Is there agreement with this overall conclusion?
3. What are the main reasons for the slow implementation and insufficient funding of the WFD in Member States (in relation to agriculture)?
4. Is EU funding of agriculture appropriate to address the risks of water over-abstraction (e.g. CAP direct payments for certain crops, rural development for using more efficient irrigation systems, research, structural funds for irrigation infrastructure)?
5. Is the current cross-compliance framework appropriate?
6. How can the proposed instruments in the WFD (e.g. water metering, water pricing) be made more effective? Should other instruments be introduced?
7. Are technology improvement enough to cope with water pressure on water bodies?
8. Are monitoring and reporting schemas enforced and effective?

IRRIGATION AND CAP GREENING: A DIFFICULT PATH

Irrigants d'Europe

CAP 2021-2027
Art. 68 + RBPS
+ Eco-scheme



PCAP 2021-2027
<u>NEW Art. 68</u> +
RBPS + Eco-scheme
+6 GNDE

CAP 2014-2020
Art. 46 +
Greening

European Council

A NEW STRATEGIC AGENDA 2019 - 2024

.. We must continue to improve the environment in our cities and our fields, improve the quality of our air and water, and promote sustainable agriculture, which is vital to ensure food security and promote quality production. We will direct efforts to combat biodiversity loss and preserve environmental systems.

Anthropogenic impacts on environment can be totally avoided or repaired ?

- Sustainability and footprint concepts need to be further developed allowing more inclusive and holistic application.

- Agreement and acceptance of bearable threshold of environmental impacts

- Recognise the role and responsability of rural and civil society managing mankind adapted natural environments: the agro-ecosystem.

WATER MANAGEMENT IN AGRICULTURE: MANAGE THE COMPLEXITY

ONE SIZE FIT ALL

FIT FOR PURPOSES

Accepting the impossibility to dominate farming complexity and its interactions with the environment, the only possible choice is to apply the PRECAUTIONARY PRINCIPLE, setting thresholds at the highest level.

Managing farming complexity and its interactions with the environment, the safety level is calculated according to the specific crop husbandry practicies and tailored solutions developed accordingly.

Irrigants d'Europe

ENVIRONMENT

AGRICULTURE AND RURAL DEVELOPMENT

WFD Revision

CAP 2021-27

CLIMATE

GROWTH

RESEARCH & INNOVATION

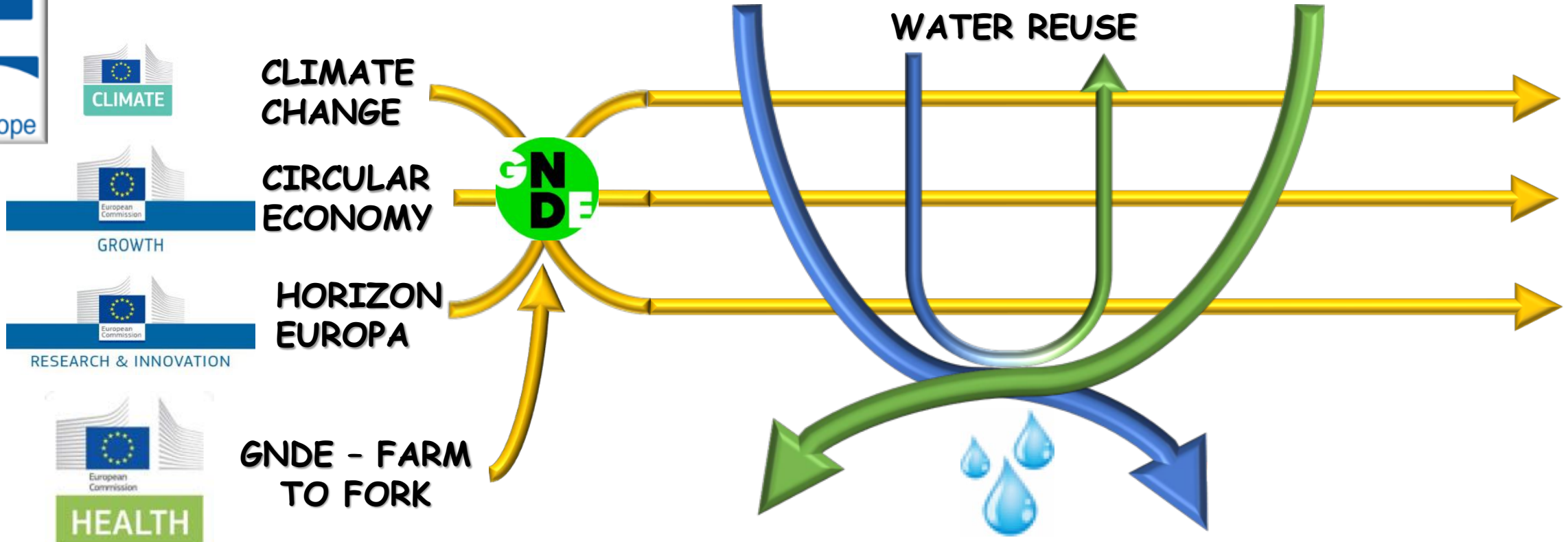
HEALTH

CLIMATE CHANGE

CIRCULAR ECONOMY

HORIZON EUROPA

GNDE – FARM TO FORK



WEFE : WATER/ENERGY/FOOD/ENVIRONMENT

AGRICULTURE'S COMPETITIVENESS

PROTECTION OF WATER RESOURCES AND WATER ENVIRONMENTS

Too often irrigated agriculture is indicated as an environmental threat and a societal cost, ignoring its benefits.

We face the risk of using the best of science and technology to address irrigation challenges, and at the same time see how European citizens are not aware of the importance of irrigated agriculture.

Can agriculture get a fair share of water resources? Or are we seeing the gradual demise of irrigated farming?

Irrigants d'Europe

WHERE ARE WE GOING ?

Extensive cropping system observation and measurement (earth obs., remote + proximity (new) sensors, key crop/soil/climate parameters monitored)

On Farm Record keeping and sharing (essential for big data management)

Knowledge of varying growing conditions

Supporting effectiveness and profitability with predictive mapping

Tools and Platforms transforming "data" in "information"

Variable rate water+fertilizers applications

Real time link Water Governance & On Farm Requirements

STATE OF THE ART

- Irrigated agriculture has great potential in terms of production of public goods, it is supported by excellent technical capabilities, and still counts on untapped resources.
- Irrigation and water management are the keys to sustainable agriculture, responding to the challenges of climate change and food security.
- Water use is now more sustainable: investments were made to support environmentally friendly growth in the sector, which is now among the most advanced and innovative in the agricultural sector and beyond.
- Rather than being a societal cost, water use in irrigated agriculture is a key driver for economic growth in rural environments and a corner stone for the implementation of precision agriculture
- Investments in new technologies can only be borne by crops with sufficiently stable economic return, which are for the most part irrigated.

MULTIFUNCTIONAL SERVICES FOR A MODERN AGRICULTURE

A MULTIFUNCTIONAL SERVICE OFFER TWO MAIN ADVANTAGES: IT COMPLY WITH THE «SWISS KNIFE» CONCEPT AND CAN BE SHARED. MORE USES AND USERS MEANS LESS TIME COSTLY OPERATIONS AND FASTER RETURN OF INVESTMENT.

AFTER YEARS OF RESEARCH AND DEVELOPMENT, LARGELY FUNDED BY EU PROJECTS AND INITIATIVES, THERE ARE THOUSANDS OF SERVICES ON SHELF, ICT OR NOT, BUT VERY FEW HAVE BEEN TAKEN UP BY FARMERS.

VERY FEW OF THEM ARE REALLY MULTIFUNCTIONAL, WHILE THE LARGE MAJORITY IS DEALING WITH ONLY ONE ASPECT OF FARMING NONE IS AS BROADLY OPERATIONAL AS COVERING THE CROPPING SYSTEM AND THE RESOURCES MANAGEMENT OUT OF FARM.

CONSIDERING THE TWO MAIN CONSTRAINTS FARMERS ARE FACING, LACK OF TIME AND INVESTMENT CAPABILITY, MULTIFUNCTIONALY SHALL BE A MUST IN THE AGRICULTURE 4.0 AGE.

ACCESS TO WATER RESOURCES

PRECISE IRRIGATION

INNOVATION

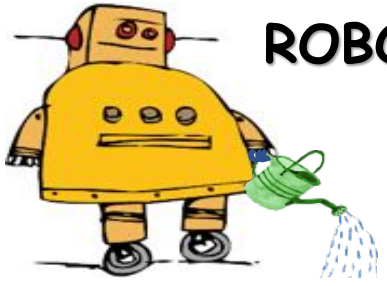
Horizon Europe

BIG DATA

+

BLOCKCHAIN of THINGS

ROBOTICS



WATER REUSE AND QUALITY

AGRICULTURE 4.0

INVESTMENT CAPABILITY

MODERNISATION OF IRRIGATION + MULTIFUNCTIONAL INFRASTRUCTURES

FAO Committee on World Food Security (CFS 46)
17 October 2019.

Attracting young people to agriculture in times of climate change and supporting them on their way to successful agribusiness remains a great challenge. Can the transition to sustainable agriculture become an opportunity?

AGRICULTURE 4.0

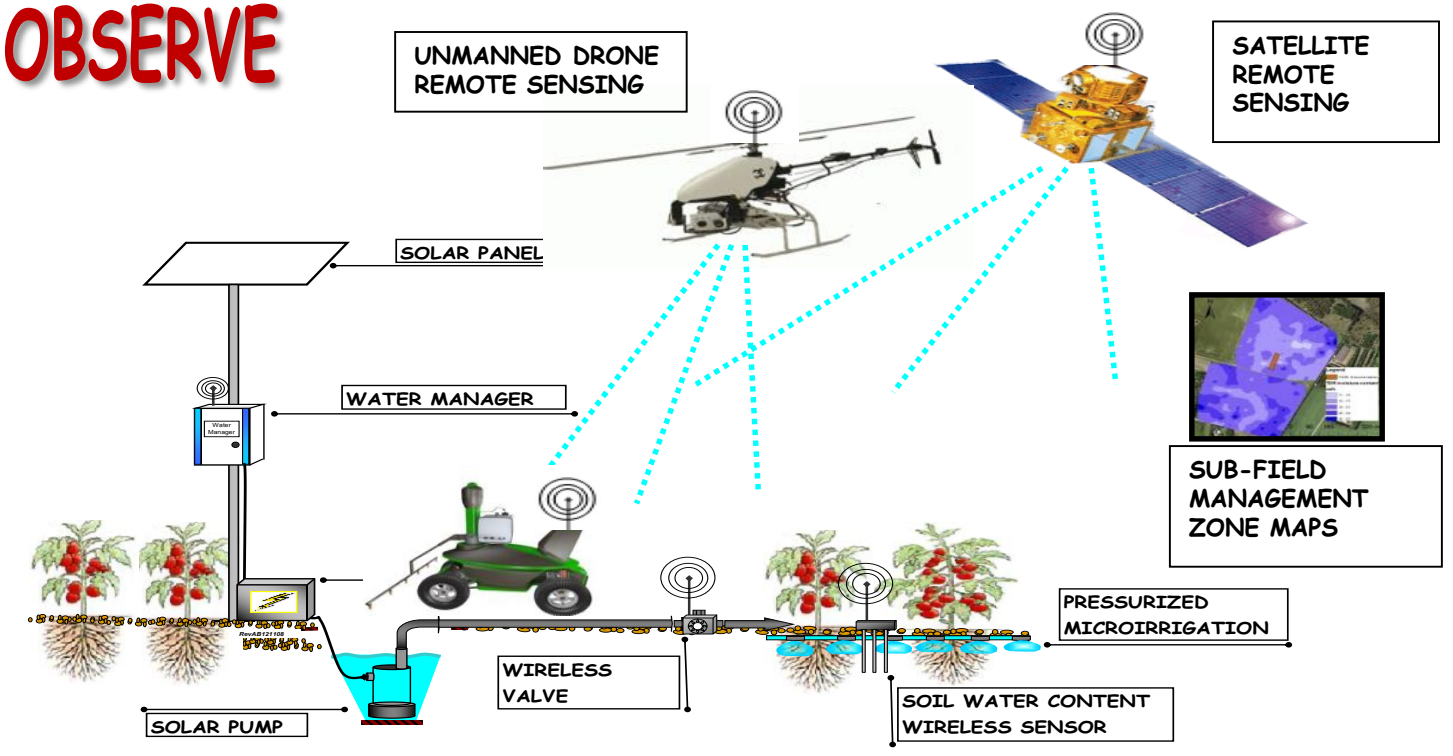
Generational Renewal

Care of the environment and water resources

IRRIGATED AGRICULTURE MULTIDISCIPLINARITY

Irrigants d'Europe

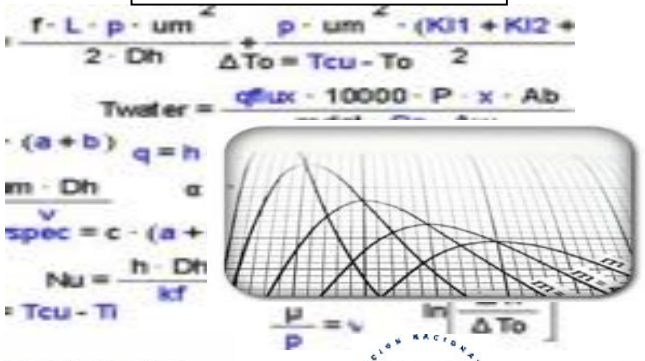
OBSERVE



MANAGE

WATER MANAGER CONTROL STATION

MODELS & DSSs



FORECAST

METEO FORECAST

CROP PROFITABILITY

WATER GOVERNANCE

ECOLOGY

MORE IRRIGATED LAND MORE WATER USE ??

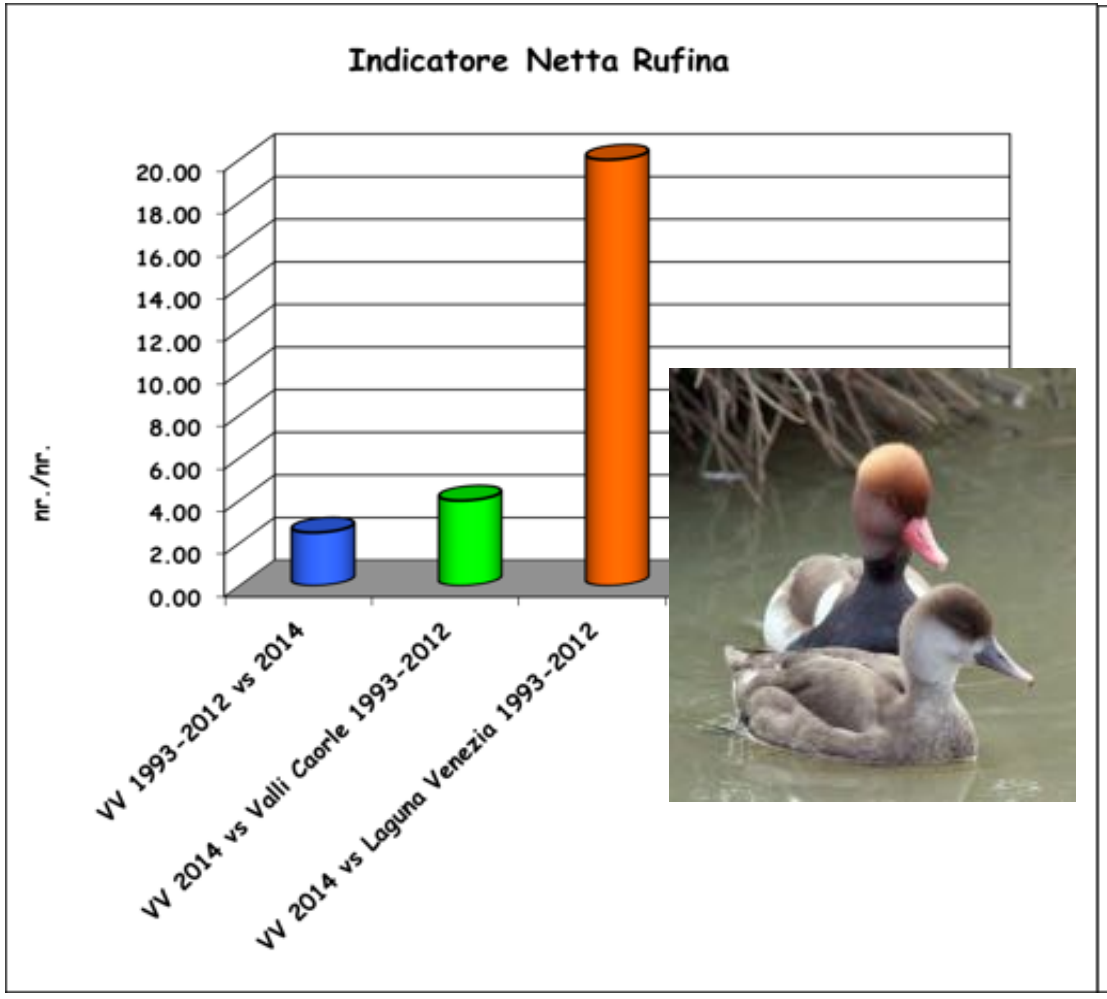
	2005 Before Modernization	2014 After Modernization	
Irrigated Land (million Ha)	3.3	3.6	+ 0.3
Total Water Use (hm^3/y)	16500	15129	-1371
Water Use (m^3/ha)	5500	4600	-900

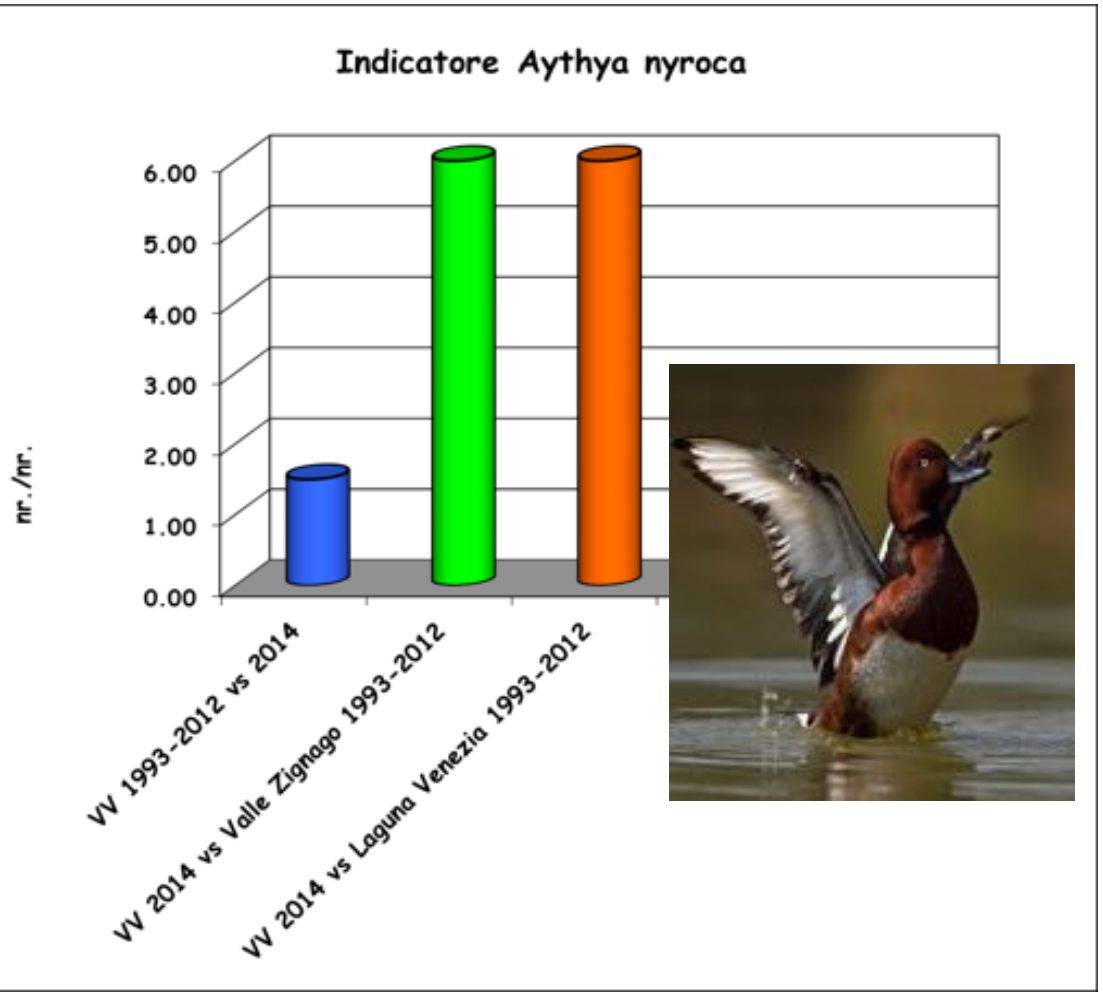
Gutierrez-Martin, C., Montilla-Lopez, N., 2018. University of Cordoba, WEARE.

CCH = + 4% Crop Water Requirement

+ 9% IRRIGATED LAND - 6,8% WATER USE

MORE BIODIVERSITY WITH IRRIGATED AGRICULTURE





LIFE11 ENV IT 035 WSTORE2
Reconciling agriculture with environment through a new water governance in coastal and saline areas

Battilani, A., Furlan, L., 2015.

Power Consumption/Generation (IT 2017)	MWh	t CO_2
Drainage & Irrigation	608.900	304.400
Hydropower & Photovoltaic	-497.000	-248.500
Modernization	-30.000	-15.000
Water savings at farm level	-64.500	-32.250
Net Power Consumption/CO_2 Emission	17.4	8.69

Mannini, P., MACFRUT 10 May 2018

IRRIGATION SECURE SUFFICIENTLY STABLE ECONOMIC RETURN

	INCREASE	Relative Crop Value	IMPACT (Inc. x RCV)/100
STAPLE CROPS	+ 27%	1.0	0.27
FRUIT CROPS	+ 35%	6.7	2.35
VEGETABLES	+ 82%	12.7	10.41
FODDER CROPS	+ 48%	0.7	0.34

IRRIGATION INCREASE IN THE AVERAGE LAND RENTABILITY OF 13500 EURO PER HECTAR (Italy 2017)

Source ANBI, IT 2018, modified A. Battilani

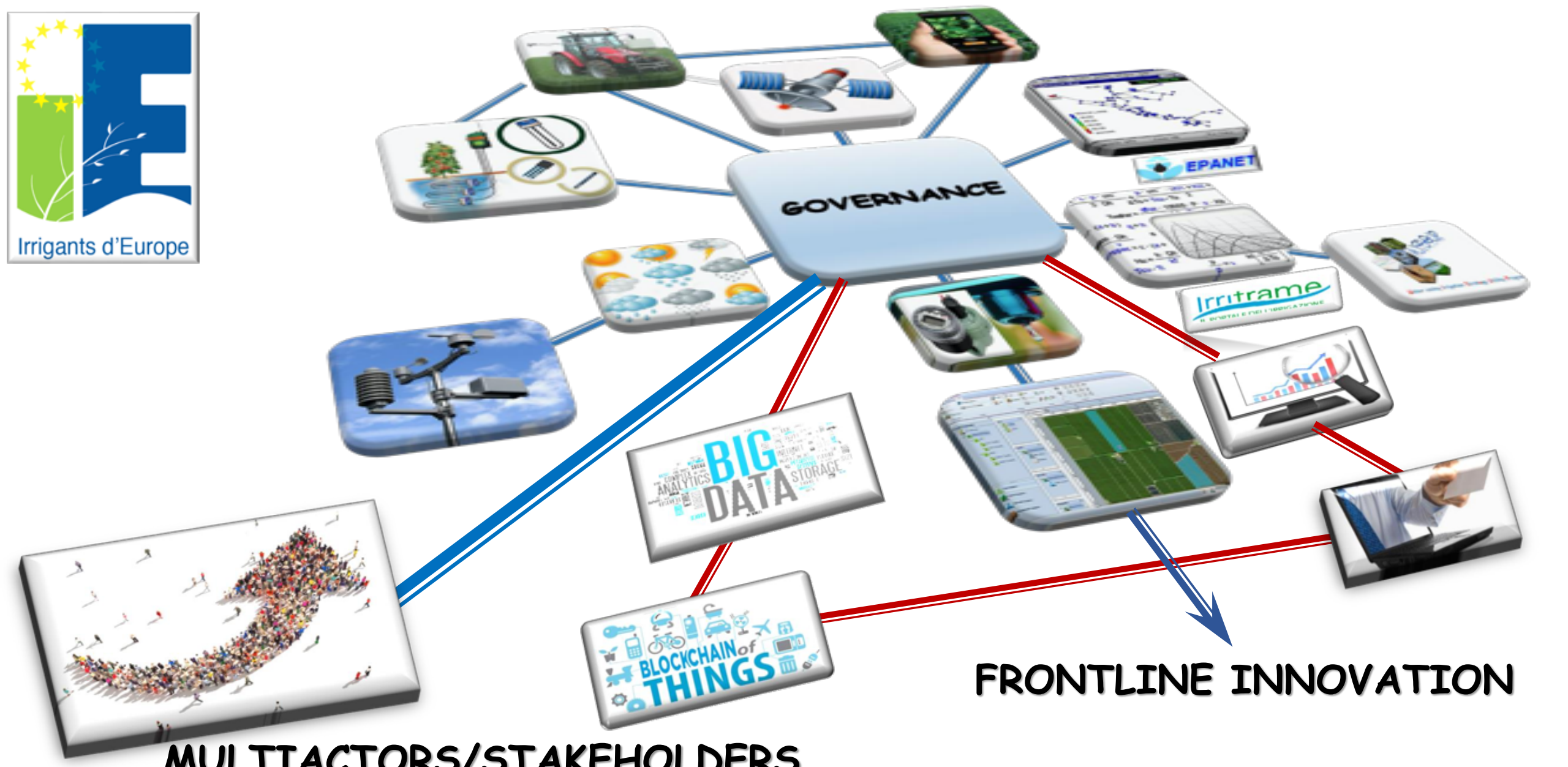
- At research level, and soon at the farm level, it'll be possible to look even at individual plant performance. Irrigation technologies are now enough mature to support precise and knowledge based irrigation management.
- Flexible and customised tools are more and more able to effectively manage agro-ecosystems and cropping systems complexity.
- When applied only to part of the cropping system information/technology have marginal value of for the farmer. However, increasing limited access to water resources are making crucial maximizing the productivity of every drop or resource unit.
- Knowledge-based Irrigation Management and Smart Water Governance offer great opportunity to reconcile agriculture and sustainable water management at river basin scale.
- Irrigation platforms integrating multi-source data analysis are paving the way for sustainable water management.

MULTIACTOR MANAGEMENT

AGRICULTURAL WATER COLLECTIVE MANAGEMENT BOARDS

VOLUNTARY ECO-SCHEMAS

NATIONAL STRATEGIC PLANS


Irrigants d'Europe
GOVERNANCE
EPANET
Irritrame
BIG DATA
ANALYTICS
STORAGE
BLOCKCHAIN of THINGS
MULTIACTORS/STAKEHOLDERS
FRONTLINE INNOVATION

IRRIGATED AGRICULTURE NEEDS

Irrigated agriculture needs an extensive and long-lasting Climate Change Adaptation Program, that goes beyond the urgent and necessary mitigations actions and, among others, policies/measures/initiatives:

- ***stimulating & supporting the sector moving toward Agriculture 4.0 through significative and lasting investments in digitalization, training and capability building;***

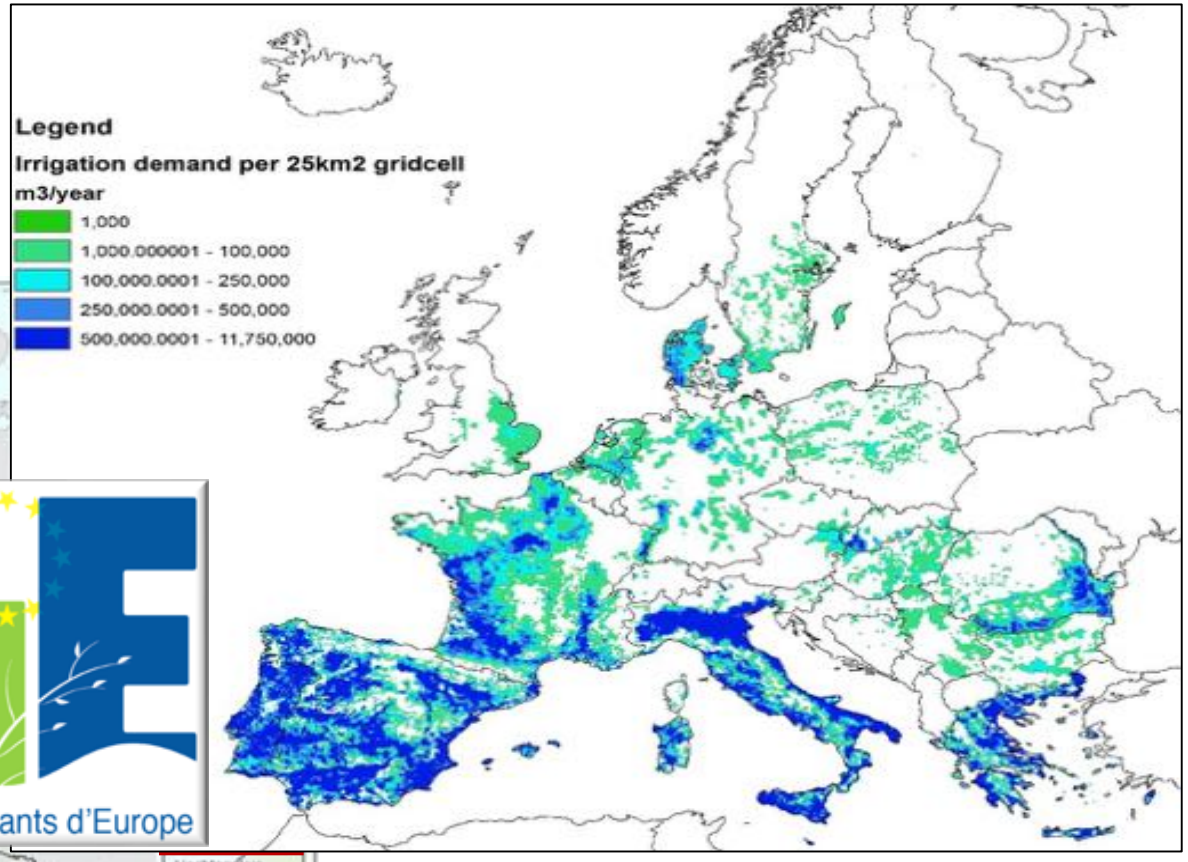
- ***avoiding any endeavour to further valorise water and monetarize ecosystem service of freshwater provision for agricultural purposes, considering that irrigated agriculture generates unaccounted positive externalities;***

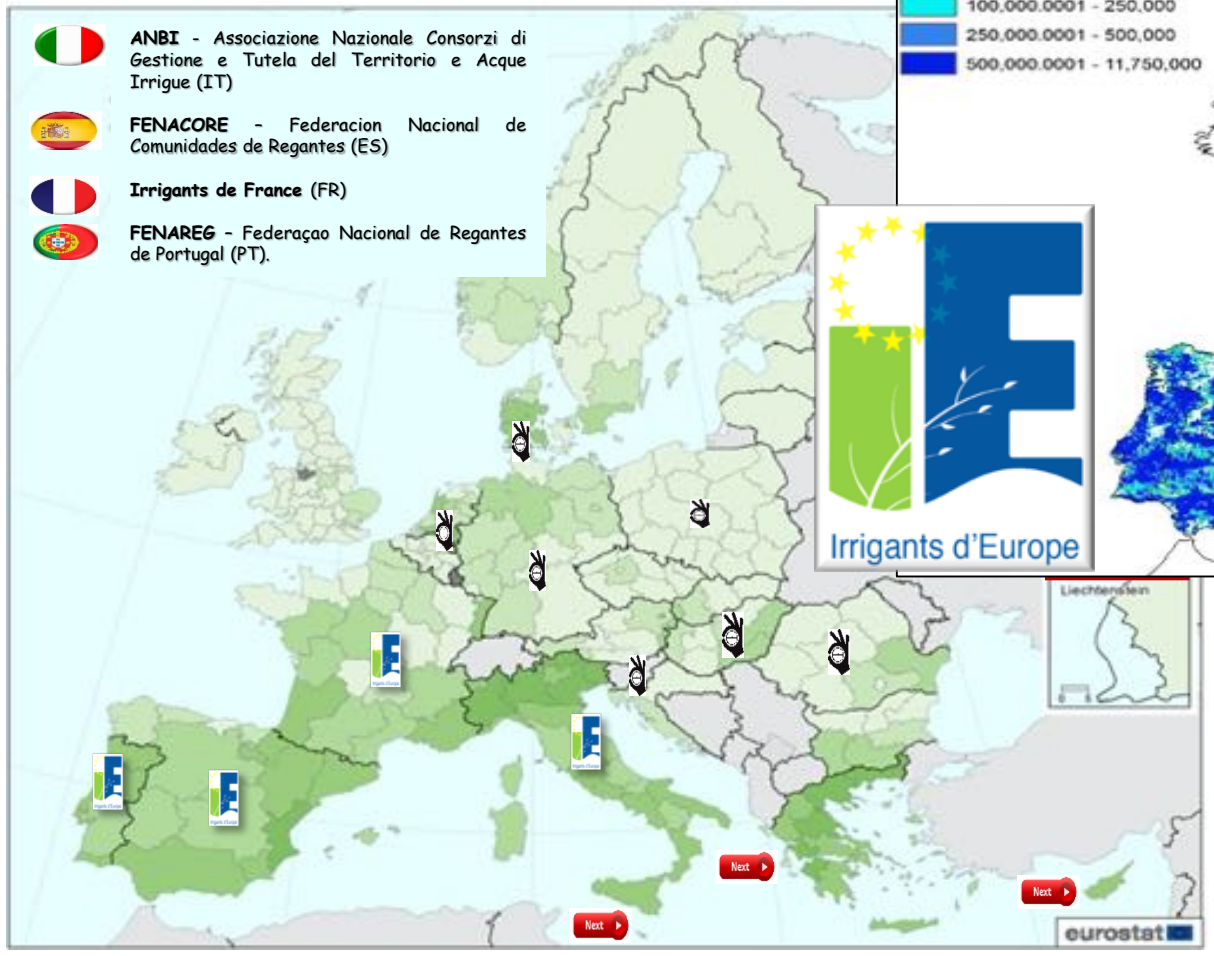
- ***facilitating irrigated agriculture sector access to financial support and affordable credit for on farm and off-farm modernization of irrigation equipment, water networks and water storage infrastructures;***

IRRIGATED AGRICULTURE NEEDS

- revising policies considering irrigation water use and productivity not only in terms of agricultural benefits but including also the environmental benefits irrigation water generates;
- implementing comprehensive risk management approaches, including risk assessment, risk reduction, risk transfer and risk retention;
- recognizing the agricultural diversity between member states and that the need of southern countries to have more and better irrigation is the only way to manage water;
- policies promoting "harvest and store" water having the wisdom to recognize diversity and prepare the future;
- considering as main parameter water productivity instead of water use or consumption.

IRRIGATION DEMAND IN EU





IRRIGANTS d'EUROPE involves about 75% of irrigated land in Europe, 7.7 out of 10.2 millions Ha.

Our mission as STAKEHOLDER

DECISION MAKERS

STAKEHOLDERS

RESEARCH & INNOVATION PROJECTS (EU, RDP, etc.)

SCIENTIFIC RESULTS

DISSEMINATION, DEMONSTRATION and APPLICATION

CREDIBILITY GAIN

STAKEHOLDERS REPRESENTIVE & LOBBYING

- CopaCogeca
- EUWMA
- EIP Water
- WIRE AG

COLLABORATIONS

- River Basins Authorities
- EU Parlament Water Group
- WFD-CIS
- DG R&D
- DG ENVIRONMENT
- DG AGRI
- WssTP
- ERRIN
- EIC
- Others…

PREPARATION and IMPACT ASSESSMENT of LOCAL , NATIONAL and EU DIRECTIVES, REGULATIONS, GUIDELINES etc.

INCREASE PRODUCTIVE & SUSTAINABLE WATER USE

Irrigants d'Europe

INVESTIGATE

*Collect and provide relevant information
* Participate in EU projects

PROMOTE

*Irrigation and agricultural water management
* Cooperation with EU bodies
* Activities highlighting benefits and positive externalities

COOPERATE

*Agricultural organizations
* Universities
* Research centres
* EU bodies
* Stakeholders

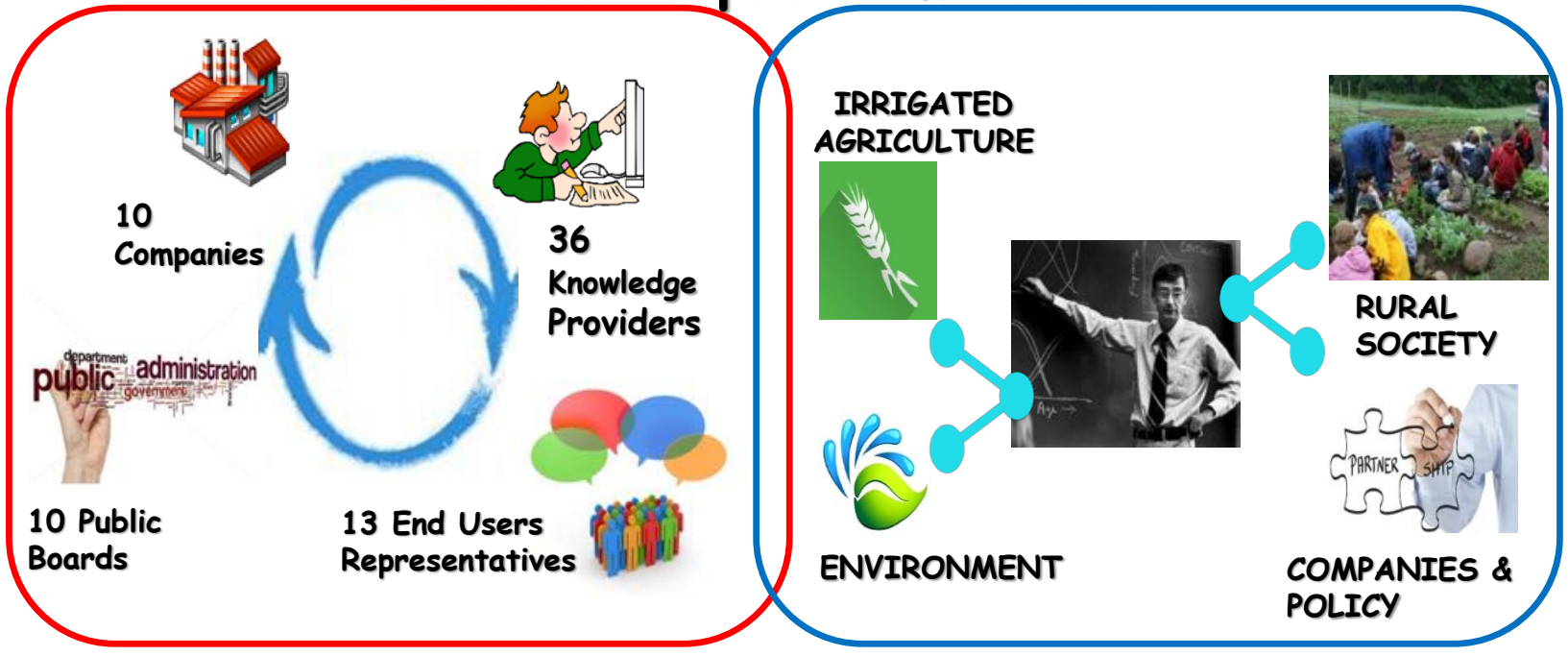
COMUNICATE

*Civil society
* Decision makers
*Media
* Participation in technical and political debates.

NETWORKING SCIENCE AND BMPs

WIRE
Water & Irrigated agriculture Resilient Europe

WIRE: a multiactors partnership connecting science to problem owners



CLOSING WORDS

IF YOU WANT WALK FAST, WALK ALONE

IF YOU WANT WALK FAR, WALK TOGETHER


THANKS FOR YOUR ATTENTION
Irrigants d'Europe

A RESEARCH AND POLICY VISION FOR EFFICIENT WATER MANAGEMENT IN MALTESE AGRICULTURE- RESULTS FROM A MULTI-NATIONAL PROJECT

Malcolm Borg

FOWARIM

- A Horizon 2020 project- concluded in December 2018
- Seven partners
- Objectives included:
  - Strengthening of collaboration
  - Training of Maltese personnel to undertake research in water use in agriculture
  - Develop lines of research in water use in agriculture in Malta

VARIOUS REPORTS WERE PREPARED…

- Input from various stakeholders including farmers, academics, NGOs, Government officials, etc.
- Two major reports:
  - Research Roadmap for water use in agriculture
  - Policy roadmap for water use in agriculture

SOME NUMBERS…

- 36.2% (or 11450 hectares) of Malta's land area is classified as agricultural area (Eurostat, 2012).
- Out of this area, 30% is irrigated.
- Average size of agricultural holdings is of the smallest within the EU-27, only 0.9 ha (in 2010).
- Over half of the arable area (58.5%) is used for cultivation of forage crops (especially wheat). The rest is mostly used for vegetables (23.9%) and potatoes (8.9%).

- Malta has no surface water resources to manage, meaning that irrigation needs are almost exclusively covered by groundwater extractions.

- Agriculture is still the most water consuming sector, using 46.7% of all water available for use from 2005 to 2013 (NSO, 2015).

RISKS

- Lack of adequate water resources to support agriculture- Malta ranks first in the list of European countries most heavily affected by water scarcity and in the top ten of most water scarce countries worldwide.

- Saline intrusion- implications for its suitability for irrigation- quality and quantity of agricultural yields and in the longer term can have detrimental effects for the quality and sustainability of the soil

PRIORITIES FOR ACTION

- **Reduce dependence** on groundwater
- **Avoid over-irrigation** through better scheduling and management
- Better **monitoring** by metering, for example.
- **New technologies**
- **Support farmers,** also through extension services and demonstration farms
- **Adapt** for climate change
- On-farm **diversification**

RESEARCH ROADMAP

- **TWO FIELDS OF INVESTMENT**
  - Human capital in education
  - Capacity building for farmers

SEVEN RESEARCH LINES

- Water Supply
- Water Governance
- Rainwater Harvesting
- Groundwater Abstraction
- Use of non-conventional water
- Optimization of water use
- Optimization of irrigation

HOW?

- Increasing political responsibility
- Involvement of stakeholders
- Inter-disciplinary research
- Promotion of stronger skills
- More data
- International networking
- …and others

THANK YOU!

MALCOLM.B.BORG@MCAST.EDU.MT

Francesco Montesano - Thematic Presentation – Water efficient irrigation in greenhouses

INNOVATIVE IRRIGATION TECHNOLOGIES FOR OUTDOOR IRRIGATION

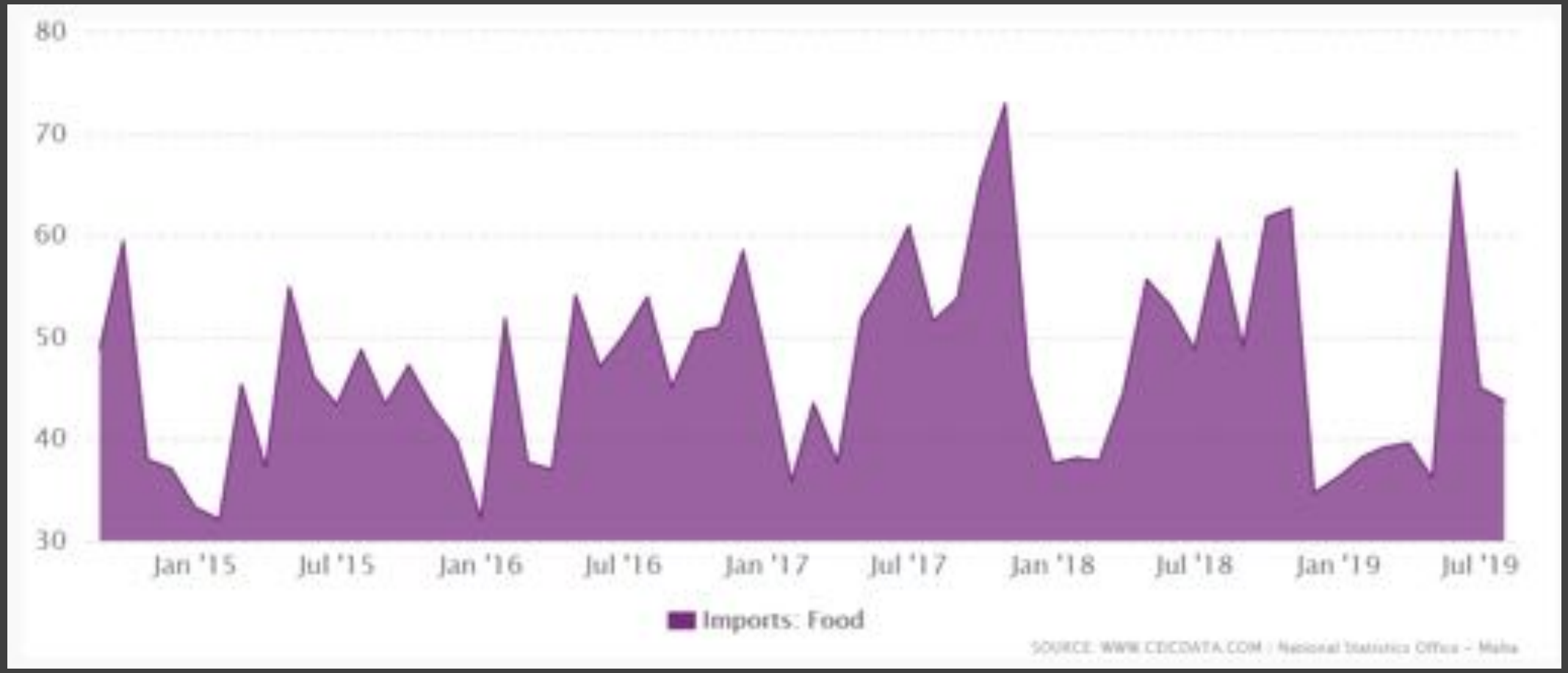
GIOELE CHIARI

ACQUA CAMPUS

FRAMEWORK

- **441.118** Malta population
- **93.2 %** of the population is **urban**
- Malta population increase **100.000 person in 20 years. Field or sky?**
- **11.450 Ha to produce food**
- A plot of 1 tumolo (1,124 sq.m or 0.1 hectare) costs approximately €20,000-€40,000
- The sector produces 75,000 tonnes of vegetables, valued at €33 million, and just short of 10,000 tonnes of fruit at a value of €7.5 million.

Sources: - hiips://www worldometers info/world -population/malta-population/
- Eurostat
- Malta Today



SEASONAL IMPORT

- LOWER IN JANUARY
- HIGHT FOR ALL THE SUMMER

Malta	2003	2010	Change (%)
Number of holdings	10 990	12 530	14.0
Total UAA (ha)	10 790	11 450	6.1
Livestock (LSU)	48 940	42 910	-12.3
Number of persons working on farms (Regular labour Force)	17 870	18 500	3.5
Average area per holding (ha)	1.0	0.9	-6.9
UAA per Inhabitant (ha/person)	0.03	0.03	0.0

AVERAGE RAINFALL

Mese	Gen	Feb	Mar	Apr	Mag	Giu	Lug	Ago	Set	Ott	Nov	Dic	Anno
Prec. (mm)	90	60	40	23	7	3	0	7	40	90	80	110	550
Giorni	14	11	9	6	3	1	0	1	4	10	11	14	84

RAINFALL HARVESTING | WATER REUSE | RAINFALL HARVESTING

AQUIFER RECHARGE

WATER SOURCES

- STORAGE RAINFALL FROM OCTOBER TO MARCH (about 15 MLN mc potential)
- REUSE IN SUMMER ABOUT TOURIST CONSUMPTION
- FEEDING ACQUIFER WITH SURPLUS

RAINFALL HARVESTING ON FIELD

RAINFALL HARVESTING ON FARM

RAINFALL HARVESTING MULTI FARM

ORGANIC MATTER AS TANK

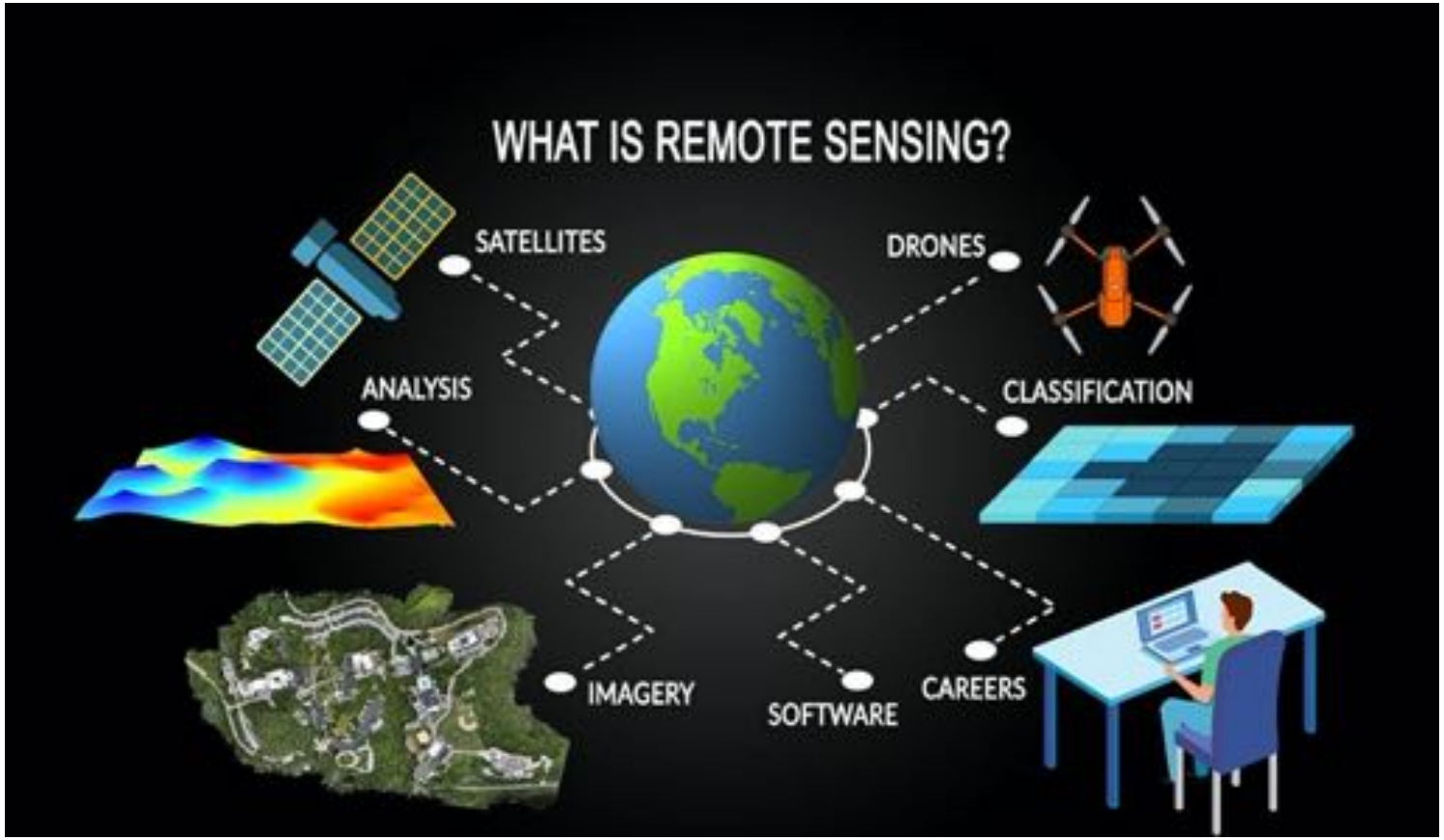
- TRANSFORM URBAN BIO WASTE IN «SPONGE»
- ENRICH SOIL

DRIP IRRIGATION

- HIGHT FREQUENCY
- LOW FLOWRATE
- LOW PRESSION
- INCREASE WATER SAVING
- INCREASE WATER USE EFFICIENCY
- LOCALIZED IRRIGATION

SPRINKLER

- HIGHT FREQUENCY
- LOW FLOWRATE
- LOW PRESSION
- INCREASE WATER SAVING
- INCREASE WATER USE EFFICIENCY
- WIDE IRRRIGATED SURFACE



REMOTE SENSING

IS THIS THE BEST SOLUTION FOR MALTA'S FARMER?

- A LOT OF INFORMATION
- MUCH INTERPRETATION NEEDED
- WIDE FIELD NEEDED
- GREAT ANALYSIS EXPERIENCE
- NOT DIRECTLY USABLE BY FARMER

MOISTURE SENSOR

- CHEAP
- EASY TO INTERPRET
- DIRECTLY USABLE BY FARMER

ORGANOPONICO

- INCREASE WATER USE EFFICIENCY
- INCREASE FOOD PRODUCTION
- INCREASE QUALITY OF FOOD AND NUTRIENT CONTENT (Vitamins, etc...)

SUWANU
EUROPE

SUWANU EUROPE

Sustainable Water treatment and Nutrient reuse

- **SUWANU EUROPE** is a **Thematic Networks** co-funded by the European Commission under its **Horizon 2020 programme**. It was submitted under the call “Rural Reinassance” (call identifier H2020-RUR-2018-2020), topic “Thematic networks compiling knowledge ready for practice” (topic identifier RUR-15-2018-2019-2020). The objective of this topic was summarising, sharing and presenting the best practices and research findings that are near close to being put into practice in a language that is easy to understand by the farmers and foresters.

SUWANU
EUROPE

MAIN OBJECTIVES

- **Develop strategies and recommendations** to pave the way for the implementation of water reuse solutions.
- **Increase the capacities** of practitioners and other stakeholders in water reuse for irrigation.
- **Create regional networks**

HAVE A GOOD AGRICOLTURE MALTA'S PEOPLE

GIOELE CHIARI

chiari@consorziocer.it

6. Images of the Event

Image 1: Conference Area

Image 2: Registrations

Image 3: Pull up poster regarding consent and data protection

Image 4: Pull up poster with the name of the conference (in English)

Image 5: Pull up poster with the name of the conference (in Maltese)

Image 6: Pull up poster with the website and the social media presence

Image 7: Table with all the merchandise

Image 8: Translator booth

Image 9: Sound equipment

Image 10: Panel discussion area

Image 11: Panel discussion

Image 12: Manuel Sapiano

Image 13: Michael Schembri

Image 14: Adriano Battilani

Image 15: Malcolm Borg

Image 16: Gioele Chiari

Image 17: Keith Demicoli

Image 18: Attendees


WATER